MAIL STOP APPEAL BRIEF

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Serial No. 09/849,768 Date: November 13, 2003

Date Filed: 5/4/2001 Examiner: A. Pechhold

Applicant: K. Krueger et al. Group: 3671

Title: Stormwater Management System Attorney No. STT-0003 (2307)

APPEAL BRIEF

REAL PARTY IN INTEREST

The real party of interest is Infiltrator Systems, Inc., a Connecticut corporation in Old Saybrook, Connecticut.

RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences.

STATUS OF CLAIMS

Claims cancelled: 1-36

Claims subjected to final rejection and this appeal: 37-46

STATUS OF AMENDMENTS

There are no amendments other than those entered prior to final rejection.

SUMMARY OF THE INVENTION

The invention comprises an improved chamber, preferably made of molded plastic, for use in receiving and dispersing stormwater. Arch shape cross section stormwater chambers are known in the prior art. Typically, an array of interconnected parallel rows of chambers are buried in gravel or other media, for instance, beneath a shopping center

parking lot. Water from storm drains is flowed to the chambers, so it can be gradually dispersed within the earth. Since the overlying load of soil and vehicles can be great, the chambers need to be strong.

In the invention, a corrugated arch shaped cross section chamber and has constant curve cross section, in particular, a truncated semi-elliptical arch shape cross section. The shape has been discovered to be uniquely strong. In preferred embodiments, chambers are characterized by

(a) cross section having certain height to width ratios, i.e., less than about 2 to 1;

(b) the chamber height is a 44-48% minor fraction of the ellipse major axis length;

(b) the chamber has a base flange 10 with a support member 11 at its outer edge, and connecting elements 13 run between the member 11 and the arch sidewall of the chamber;

(c) the chamber has a domed endplate.

ISSUES

1. Can the claims be rejected for obviousness based on what Fig. 4 of Nichols Patent 5,401,116 is alleged to show, without considering the patent reference as a whole -- namely without considering the text of the specification which explains the drawing.

2. Can claims be rejected on dimensions and proportions taken from a drawing which is not to scale?

3. Can the claims be rejected on the basis only that the prior art was capable of being the invention?

4. Can claims 38 and 39, which comprise certain height to width aspect ratios, be rejected for obviousness (a) because an aspect ratio of 2.5 to 1, allegedly taught by the un-scaled Fig. 4, is asserted to be the same as a ratio of 2 to 1; and (b) because the ratio reflects mere optimization, when the art entails contradictory design factors and no particular direction in which to optimize?

5. Can claims 41, 42, 45 and 46, which comprise particular base flange structures, be rejected for obviousness, on the basis of prior art which only shows that a base flange supports a load, and therefore implicitly needs to be strong?

6. Can claims 43 and 44, which comprise a dome shaped end plate, be rejected for obviousness when the reference is a chamber having a flat end plate?

ARGUMENT

In summary:

First, in the main, the rejection is based on improper hindsight. The rejection takes applicants' teaching of truncated semi-ellipse and infers it into prior art, in particular, into the commonly owned Pat. No. 5,501,116 of Nichols. In that patent, there is simply no suggestion of ellipse, semi-ellipse, or truncated semi-ellipse, or to optimize in that direction.

Second, chamber design is non-routine and has confusing and contradictory tradeoffs, and therefore parametric optimization is neither taught nor obvious.

Third, the prior art does not even suggest structure which includes a base flange with vertical outer edge member and connecting elements. Nor does it suggest a chamber having a domed endplate.

Fourth, the examiner has not met her burden under the law and MPEP in establishing a prima facie case of obviousness.

1. Rejection of claims 37-40, 43, 44 under 35 USC 103(a) and Nichols Patent

1.1 The rejection concedes that Nichols 5,401,116 does not show a semi-ellipse, but says Nichols' Fig. 4 chamber would be "capable" of being a semi-ellipse, and that such "illustrate(s) the possibility" and have "no indication the arch shape conduit cannot be a truncated semi-ellipse". FR2, last 8 lines. (FR = Final Rejection Paper No. 20; FR2 = FR at Page 2) The rejection relies on what Fig. 4 of the Nichols '116 patent is said to show.

Applicants make several essential arguments. In a nutshell: First, the rejection does not meet the necessary standards in law, and is improper on its face. Second, the drawing shows a prior art chamber which does not have a continuous curve. Third, the drawing is not to scale and its proportions cannot be used as a basis for rejection. Fourth, even if the drawing did show a continuous curve chamber and was to scale, there is no basis for supposing the curve to be a truncated semi-ellipse. Fifth, the art of chamber design is complex, and it is not obvious to have that a semi-ellipse which is truncated to any particular degree, or to have a particular aspect ratio. Applicants now elaborate on these points.

1.2 The basic considerations for valid 35 USC 103 rejection comprise "(B) The references must be considered as a whole and must suggest the desirability and thus obviousness of making the combination; (C) The references must be viewed without benefit of impermissible hindsight..." MPEP 2141. "The examiner should set forth "an explanation of why one of ordinary skill in the art at the time the invention was made would have been motivated to make the proposed modification" MPEP 706.02(j). "First, there must be some suggestion or motivation either in the references themselves or in the

knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the teachings...Finally, the prior art reference (or the references when combined) must teach or suggest all the claim limitations." MPEP 706.02(j). "It is never appropriate to rely solely on "common knowledge" in the art without evidentiary support in the record, as the principal evidence upon which a rejection is based." MPEP 2144.03.

In their 3/26/03 response prior to the final rejection (believed to be Paper 19), applicants traversed the examiner's assertion about ordinary skill, routine design, etc. requested that examiner state specifically where she finds the routine skill with respect to any continued rejection, in accord with MPEP 2144.03. See the response at page 3, last 3 lines; page 4, paragraph 6; page 5, paragraph 11. She has not responded; and the rejection on such basis accordingly is not supportable. "If applicant adequately traverses the examiner's assertion ...the examiner must provide documentary evidence....(and If the traverse was inadequate, the examiner should include an explanation as to why....." MPEP 2144.03

Applicants are unaware of any text book teaching or course of study. (Compare, design of buried round tubes or pipes, where such might exist.) The factors below shown how molded plastic chamber design is complicated and unusual. Design optimization is not obvious, and not routine, given lack of standardization in shapes and potentially confusing or contradictory trade-offs.

The basis for the obviousness of the rejection is that to make a truncated semi-ellipse is within the routine skill of the teaching of Nichols Fig. 4. However, there is no support for that, and to make that the primary basis for rejection is contrary to MPEP 2144.03 and the cases cited therein.

1.3 Drawings must be understood in context. Declarations of Nichols and of his then-attorney were submitted as part of the response of 3/26/03 (believed to be paper 19), to which reference should be made. The declarations emphasize, with specific references to the patent text, what the Nichols' figures show and could have shown.

The Nichols declaration states in part:

> *4. Fig. 1 of the '017* (5,336,017) *application is intended to illustrate a prior art chamber of the '661 application.* (Pat. No. 4,759,661) *See Background at Column 1, lines 1-23, the description at Column 3, lines 26-34. As reference to Fig. 1 and Fig. 3 of the '661 application shows, that prior art chamber has straight sidewalls of 18-19 degree slope and a curved top. Column 6, line 15.* (Note: Nichols Pat. No. 5,401,116 is a continuation of 5,336,017, i.e., identical disclosure.)
>
> *6. To the extent any Figures of the '017 application are viewed as showing a chamber with continuously curved sidewalls, i.e., sidewalls which are not straight, it is inconsistent with what the words of the specification say is illustrated, and a misinterpretation, since there was no prior art chamber with curved walls.*

7. At the time of the '017 application and patent issuance, neither I nor anyone associated with me in chamber design and manufacture had designed, described, published or offered for sale a continuously curved cross section chamber. We only conceived straight sidewalls, wanting to have consistent slot geometry all along the height of the sidewall.

The Nessler declaration states in part:

5. Nichols '017 Fig. 4 is almost entirely a reproduction of Fig. 4 (sic, should be Fig. 1). *Both comprise artistic renderings of the chamber body, sidewall and slots of a chamber. Such features were only suggested because they were immaterial to the claims (other than the generality of having an arch shape). They were suggestive to enable focus was on the end details of chambers and the joint between chambers.*

6. The Fig. 1 and 4 drawings were not intended to communicate, and should not be interpreted to describe, anything more about the prior art than what is referred to, namely, the chamber design shown in Pat. No. 4,759,661, for reasons set forth in the Nichols declaration...

The Fig. 4 drawing is an artistic rendering and it was not scaled nor intended to show anything particular about cross section shape. As the Nichols declaration makes reference, the '116 specification says

"...the invention is described in terms of an arch shape conduit...(of)...Pat. No. 4,759,661." Col. 1, line 26-29. *"Fig. 1 shows a fragment of the prior art device."* Col. 1, line 34. *"Fig. 4-6 correspond with Fig. 1 and 2..."* Col. 4, line 3.

Applicants appreciate that an invention may be anticipated or rendered obvious by a drawing in a reference, whether the drawing disclosure be accidental or intentional; and, that a drawing is available for all it teaches a person of ordinary skill in the art. While the Fig. 4 drawing appears to show a curved chamber, to support anticipation, the drawing "must clearly show the structure which is claimed....The drawings must be evaluated for what they reasonably disclose...." MPEP 2125 first section, emphasis added.

Thus, the rejection cannot be founded on a conclusion which is made without considering the reference as a whole, which means at least include the text accompanying the drawing in combination with the drawing. To not do so leads to an unfair evaluation of what the reference shows.

The Fig. 4 drawing does not clearly show a truncated semi-ellipse. It is not a reasonable evaluation, to consider the Fig. 4 drawing in isolation of the accompanying text, which states the drawing discloses a chamber of the prior Pat. No. 4,759,661, which chamber

has a discontinuous curve cross section and a planar sidewall. Therefore the rejection is based on a selective partial consideration of the reference and is improper.

1.4 There is no indication in Nichols '017 that the Fig. 1 and Fig. 4 drawings are to scale. They are silent as to dimension. The isometric-like view distorts the appearance of the chamber cross section. Thus, the proportions of Nichols Fig. 4 cannot be used as evidence of actual proportions. MPEP 2125 second section. Implicit in "proportions" is the shape of the curve of the cross section. Thus, no teaching about proportions and the nature of the curve can be relied on.

1.5. In the alternative, even if the generality of a curved chamber is presumed to be taught by Fig. 4, the rejection is improper. The rejection says that the Nichols chamber shape inherently has a major axis and that the center point of that axis is disposed below the base of the chamber. FR Page 2.

However, that part of the rejection presumes, without basis, that the Nichols curve cross section geometry is radius-defined, e.g., that it is a section of an ellipse or circle, etc. (Unless the curve is radius-defined, there can be no center point of an axis. For instance a parabola or hyperbola may have an axis but it will have no center point.) The cross section geometry of the Fig. 4 chamber could equally likely be taken to be a parabola or some other function which is not radius-defined. In such case, there could be no inherency of major axis center point anywhere. So the rejection is improperly based on something which is not taught by the art, and by imposing hindsight.

And, even if Nichols were to be taken to show a radius-defined curve, what indicates that such curve is a portion of ellipse, rather than for example a portion of a circle? What is to indicate that it is a truncated semi-ellipse, as applicants here claim? The answer is: Nothing that has been cited in the rejection.

So, it is classic hindsight, for the rejection to say that Fig. 4 shows a shape having a major axis with a center point, and that the curve is a truncated semi-ellipse. The examiner declined the invitation to support, by citing a teaching, or another reference which would combine. Paper 19, page 3, last paragraph. Rather, the rejection is based on the possibility that "the drawings illustrate the possibility that the conduit (of Nichols) could be a truncated semi-ellipse..." FR 2, last 2 lines. More is required than that to sustain a rejection.

1.6 The Fouss Pat. No. 4,360,042 was cited in the past, but is not a basis for final rejection. However, applicant submitted previously, and submits again here, that Fouss is a good reference and documents the complexity of chamber design and the non-obviousness of truncated semi-ellipse cross section and associated aspect ratio.

Fouss focuses on a parabola, but also shows a semi-circle (Fig. 10), a semi-ellipse (Fig. 9), and a multi-radii arch (Fig. 11). Fouss shows how his shapes are in fact distinct with respect to the stress distribution and deflection. See Fouss Fig. 12 and his whole teaching.

Applicant reproduces in Exhibit A certain superimposed cross section drawings of Fouss, along with their own Fig. 3 cross section. There are evident sidewall shape differences, especially near the base. Applicants' truncated semi-ellipse chamber has a greater inward incline than do the sidewalls of Fouss's semi-ellipse or semi-circle, and has a different top shape than does the Fouss parabola. Applicants' truncated semi-ellipse is mathematically and structurally distinct curve from any of the Fouss chamber cross section curves.

Fouss teaches how the shapes provide different load distributions and defections, due to the hydraulic force gradient (mostly a bending stress). Thus, seemingly small differences in shape make consequential differences in performance. Furthermore, Fouss does not address buckling, or the complex stress distribution as do applicants, as described in specification at pages 11-14, which make what would work well and what would not even more complicated. Applicants have discovered a truncated semi-ellipse is superior, as evidenced by the test data in their specification.

So, based on applicants' specification and the teaching of Fouss, one cannot say that the curve of a chamber is simply an obvious variation. There are simply too many variables and different directions in which to go. Given the significant differences in behavior of what might seem small variations, it would not be obvious to even try applicants' truncated semi-ellipse.

2. Rejection of claims 38 and 39 under 35 USC 103(a)

As to claims 38, 39, a measurement of Fig. 4, made contrary to applicants contention the drawing cannot be so used, appears to show an aspect ratio of about 2.5. Relying on that, the rejection states that "the ratio of Nichols can be argued to be 'about' 2." FR pg 3, line 3.

The term "about" means approximately. Claims are interpreted in light of the specification. The specification at page 3 makes clear that there is a distinction between 2.5 and 2, and thus "about 2.5" would not read on "about 2". The examiner has no basis, in context of any disclosure or reference, or routine skill, for inferring that 2.5 reads on "about 2". She seems to solely do so to make the rejection. Thus, the rejection should fail.

The rejection further says in the alternative that it would have been obvious to modify the shape of Nichols, and that determining the workable range of aspect ratio involves only routine skill. From the teachings of Fouss Pat. No. 4,360,042 and the present application, shape is critical to performance. Therefore, aspect ratio is critical because it

affects shape. However, there is no teaching in what direction to move with aspect ratio, inasmuch as there are countervailing criteria, as the following illustrates.

Fouss shows aspect ratio in terms of H/W, whereas applicant claims in terms of W/H. Fouss mentions an aspect ratio H/W of 0.885 (W/H of 1.12) for the semi-elliptic chamber at Col. 11, line 52 on. Fouss Fig. 16 graph shows how aspect ratio H/W (i.e., presenting data equivalent to W/H over the range of 0.8-3.3) affects strength, and how the effect differs with the chamber cross section shape. Since Fouss shows that the W/H for best strength varies with chamber shape, how can it be obvious what W/H is routine and obvious to determine optimal W/H for applicants truncated semi-ellipse chamber.

Pat. No. 5,890,838 was submitted to the examiner. The patent shows a high aspect ratio chamber having trapezoid cross section, and planar sidewall. A bridge spans parallel spaced apart chambers. At Col. 4, lines 6-26, W/H ratios of less than about 1.4 to 1 are taught. (In the patent, aspect ratio is presented as H/W, and has been restated here as W/H, to accord with the instant claims.) The '838 patent mentions chambers with W/H 2.8-1.5 (H/W of 0.36-0.65). Reference is made to Pat. No. 5,511,903, also submitted, which at Col. 9, lines 9-50, indicates that low aspect ratios are bad.

In addition to the compressive or pseudo-hydraulic load of soil on the chambers, other failure modes include buckling, which is not mentioned in the prior art patents. Other important criteria drive aspect ratio choice, including volume per unit length, for storing water; thickness or weight of material per unit chamber length or per unit storage volume for cost; shape which moldable, for manufacturability; shape which nests well for shipment.

In a simplified view, making W/H small may be considered good by some, because it provides good vertical strength. But the chamber interior volume becomes small and nesting for shipment is bad. So, that drives toward making W/H large.

Thus, applicants rebutted, as a basis for rejection, that there is a generalized teaching that there is some direction to optimize aspect ratio for any particular shape, or for all shapes; or that doing so is routine engineering, or that there would be an obvious ratio useful for the claimed truncated semi-ellipse chambers. See Paper 19, page 4, paragraph 6, and the comments about ordinary skill and the examiner obligation to cite a reference in view of traverse, in Section 1.2, supra.

Claims 38-39 embrace a particular range which is significantly less than the 2.5 to 1 ratio attributed to Nichols '017 Fig. 4, and which is untaught by the other chambers in the prior art, irrespective they do not have truncated semi-ellipse shape. As examiner points out, applicants disclose more broad range. However, that does not preclude them from claiming a less and more preferred part of their invention, since there Nichols patent does not teach any ratio for truncated semi-ellipse cross section.

3. Rejection of claims 41 and 42 under 35 USC 103(a)

Claims 41, 42 involve the outward extending flange at the base of the chamber which has a support member (upright) 11 at its extremity, and a one or more connecting members 13, which run transverse to the chamber length, from the chamber sidewall to the flange.

Examiner combines DeTuillo with Nichols, saying that DeTuillo at Fig. 1, teaches a support member. DeTuillo item 26 is the flange, which is flat. The basis given for the rejection is that the flange of DeTuillo supports the chamber on the ground, and that DeTuillo teaches a thicker flange. FR8, paragraph 2. It is thus obvious to increase thickness. The examiner further asserts this makes applicants' structure.

And, how is that the examiner knows increasing strength is a goal, when reducing material and weight while maintaining strength could equally be a goal? Neither applicants nor DeTuillo mention increasing strength, nor increasing thickness. The examiner asserts DeTuillo teaches a much thicker flange, but applicants find nothing in DeTuillo to such effect.

The cited reference does not disclose each and every limitation of the claimed invention. DeTuillo neither shows nor suggests support member 11. Thus, the principal basis for the rejection is the examiner's opinion of ordinary skill, without documentation, and that is not proper. MPEP 2144.03.

DeTuillo's chamber is vacuum formed (commonly also called "thermoformed") plastic. Col. 6, line 16-18. As well known, an upright member 11 is impossible to form in such a process/product. Thus, not only is there no teaching, there is no possibility of DeTuillo making such a chamber. The reference must be considered as a whole.

DeTuillo nesting lugs 24 serve a vertical load supporting purpose, and there is no suggestion that they be connected to anything; only that they extend from the chamber sidewall, to prevent jamming. The nature of thermoformed product is that there can be no flange running under the lugs 24; and, none is shown nor suggested by DeTuillo. The presence of the lugs may weaken or strengthen the DeTuillo chamber flange. What they do is unknown, and thus there is no teaching. There is no suggestion that nesting lugs be used for strengthening the flange, nor that they be combined the outer support member.

Thus as to claims 43, 44: First, the combination of patents is not the invention. Second, there is no teaching whatsoever of a member 11, or of connecting elements 13 in combination with such. Third, the rejection is based on impermissible hindsight.

4. Rejection of claims 43 and 44 under 35 USC 103(a)

Claims 43 and 44, for the combination of chamber of claim 37 with dome endplate, as shown in Fig. 7 and 8, are rejected at FR 4, line 3-4. The rejection only cites the closure

in Fig. 12 of Nichols, which is a flat plate endplate. Therefore, there is if anything a teaching away from the invention; and no basis for rejecting claims 43 and 44. There is simply no prima facie case for an obviousness rejection.

5. Rejection of claims 45, 46 under 35 USC 103(a) in view of Nichols and DeTuillo

Claims 45 and 46 are like claims 43 and 44, and the rejection is essentially a repeat of the rejection for claims 43 and 44. Applicant's argument about the unsustainability of the rejection is the same as just above.

CONCLUSION

For an obviousness rejection to be proper, examiner must meet the burden by establishing prima facie case of obviousness. In re Fine, 5 USPQ 2d 1596, 1598 (Fed. Cir. 1988). Establishing a prima facie case of obviousness requires that all the elements of the invention be disclosed in the prior art. In re Wilson, 165 USPQ 494, 496 (CCPA 1970). The examiner cannot base a prima facie obviousness rejection on an unsupported assertion of ordinary skill.

The rejection has not done what is required. It is based on impermissible hindsight, distortion of what the drawing of the Nichols patent shows or teaches, in the case of the matter of claim 37, and on a lack of cited references which teach or suggest a basis for rejecting the dependent claims. Since claim 37 is allowable, the dependent claims should be at least allowable by virtue of their novelty. Notwithstanding, the dependent claims have additive novelty and should be allowed on that basis, irrespective of claim 37.

The rejection should be reversed and all the claims should be allowed.

Respectfully submitted,
K. KRUEGER ET AL.

By _____
Their Attorney

Charles G. Nessler
Box H
Chester, CT 06412
(860) 526 9149
fax (860) 526 1043

APPENDIX

CLAIMS UNDER APPEAL

37. In a corrugated arch shape cross section chamber, for receiving and dispersing stormwater when buried in compactable media, wherein opposing chamber sidewalls run upwardly from the chamber base to the chamber top to define an arch shape cross section geometry having an inner height H, measured along the central vertical axis of the cross section, and an inner width W, measured horizontally at said base; the improvement which comprises: an arch shape cross section geometry which is a truncated semi-ellipse having a major axis lying along said vertical axis.

38. The improved chamber of claim 37, wherein the chamber has a width to height ratio (W/H) between about 0.5 to 1 and 2 to 1.

39. The improved chamber of claim 37, wherein W/H is between 1 to 1 and 2 to 1.

40. The improved chamber of claim 37, wherein the height H of the chamber is between about 44 and 48 percent of the length of the major axis of the ellipse of which the truncated semi-ellipse is a portion.

41. The chamber of claim 37, wherein the improvement further comprises an outwardly extending flange running along the base of each of said opposing sidewalls; and, a support member running upwardly from the outermost edge of each said flange.

42. The chamber of claim 40, wherein the improvement further comprises a plurality of connecting elements on each opposing side of the chamber, running transverse to the length of the chamber, from the support member to the sidewall of the chamber.

43. The improved chamber of claim 37 in combination with a domed endplate, wherein the endplate is engaged with an end of the chamber.

44. The improved chamber of claim 38 in combination with a domed endplate, wherein the endplate is engaged with an end of the chamber.

45. In a corrugated arch shape cross section chamber, for receiving and dispersing stormwater when buried in compactable media; the chamber having a length; wherein, opposing sidewalls run upwardly from the chamber base to the chamber top to define an arch shape cross section geometry having an inner height H measured along the central vertical axis of the cross section and an inner width W measured horizontally at said base; the improvement which comprises: an arch shape cross section geometry which is a continuous curve; and an outwardly extending flange running along the base of each of said opposing sidewalls; and, a support member running upwardly from the outermost edge of each said flange.

46. The chamber of claim 45, wherein the improvement further comprises a plurality of connecting elements on each opposing side of the chamber, running transverse to the length of the chamber, from the support member to the sidewall of the chamber.

EXHIBIT A
November 13, 2003